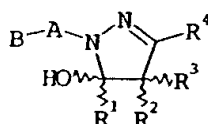


CLEAN COPY OF THE CLAIMS AS FILED

1. A method for controlling harmful fungi, which comprises treating the fungi or materials, plants, soil or seeds to be protected against fungal attack with an effective amount of a compound of formula I



where:

- B is phenyl, naphthyl,  
5-membered hetaryl, containing one to four nitrogen atoms or one to three nitrogen atoms and one sulfur or oxygen atom or  
6-membered hetaryl containing one to four nitrogen atoms; where the cyclic groups may carry one to four radicals R<sup>a</sup>
- R<sup>a</sup> is halogen, cyano, nitro, hydroxyl, amino, carboxyl, aminocarbonyl, alkyl, haloalkyl, alkenyl, haloalkenyl, alkenyloxy, haloalkenyloxy, alkynyl, haloalkynyl, alkynyloxy, haloalkynyloxy, alkoxy, haloalkoxy, alkylthio, haloalkylthio, alkylamino, dialkylamino, alkylcarbonyl, alkoxycarbonyl, alkylcarbonyloxy, alkylaminocarbonyl, dialkylaminocarbonyl, alkylcarbonylamino, alkoxycarbonylamino, alkylcarbonyl-N-alkylamino or alkoxycarbonyl-N-alkylamino, where the alkyl groups in these radicals contain 1 to 6 carbon atoms and the alkenyl or alkynyl groups mentioned in these radicals contain 2 to 8 carbon atoms;

cycloalkyl, cycloalkoxy, cycloalkylthio, cycloalkylamino, cycloalkyl-N-alkylamino, heterocyclyl, heterocycloxy, heterocyclylthio, heterocyclylamino or heterocyclyl-N-alkylamino, where the cyclic systems contain 3 to 6 ring members and the alkyl groups in these radicals contain 1 to 6 carbon atoms; unsubstituted or R<sup>b</sup>-substituted phenyl, phenyloxy, phenylthio, phenylamino, phenyl-N-alkylamino, phenylalkoxy, phenylalkylthio, phenylalkylamino, phenylalkyl-N-alkylamino, hetaryl, hetaryloxy, hetarylthio, hetarylamino, hetaryl-N-alkylamino, hetarylalkoxy, hetarylalkylthio, hetarylalkylamino and hetarylalkyl-N-alkylamino, where the hetaryl radicals contain 5 or 6 ring members and the alkyl groups in these radicals contain 1 to 6 carbon atoms, where

R<sup>b</sup> is halogen, cyano, nitro, C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-haloalkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy, C<sub>1</sub>-C<sub>4</sub>-haloalkoxy, C<sub>1</sub>-C<sub>4</sub>-alkylamino, di-C<sub>1</sub>-C<sub>4</sub>-alkylamino or C<sub>1</sub>-C<sub>4</sub>-alkyl thio ;

and/or one or two of the following radicals

- formyl,
- CR<sup>iii</sup>=NOR<sup>iv</sup> where R<sup>iii</sup> is hydrogen, alkyl, cycloalkyl or phenyl and R<sup>iv</sup> is alkyl, alkenyl, haloalkenyl, alkynyl or phenylalkyl (where the alkyl groups mentioned contain 1 to 6 carbon atom and the cycloalkyl groups, alkenyl groups and alkynyl groups mentioned contain 3 to 8 carbon atoms),
- NR<sup>v</sup>-CO-D-R<sup>vi</sup> where R<sup>v</sup> is hydrogen, hydroxyl, C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>2</sub>-C<sub>6</sub>-alkenyl, C<sub>2</sub>-C<sub>6</sub>-alkynyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, C<sub>2</sub>-C<sub>6</sub>-alkenyloxy, C<sub>2</sub>-C<sub>6</sub>-alkynyloxy, C<sub>1</sub>-C<sub>6</sub>-

alkoxy-C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy-C<sub>1</sub>-C<sub>6</sub>-alkoxy or C<sub>1</sub>-C<sub>6</sub>-alkoxycarbonyl, R<sup>vi</sup> is hydrogen, C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>2</sub>-C<sub>6</sub>-alkenyl, C<sub>2</sub>-C<sub>6</sub>-alkynyl, C<sub>3</sub>-C<sub>6</sub>-cycloalkyl, C<sub>3</sub>-C<sub>6</sub>-cycloalkenyl, phenyl, phenyl-C<sub>1</sub>-C<sub>6</sub>-alkyl, hetaryl or hetaryl-C<sub>1</sub>-C<sub>6</sub>-alkyl and D is a direct bond, oxygen or nitrogen, where the nitrogen may carry one of the groups mentioned under R<sup>vi</sup>,

and/or where two adjacent carbon atoms of the cyclic systems may carry a C<sub>3</sub>-C<sub>5</sub>-alkylene, C<sub>3</sub>-C<sub>5</sub>-alkenylene, oxy-C<sub>2</sub>-C<sub>4</sub>-alkylene, oxy-C<sub>1</sub>-C<sub>3</sub>-alkyleneoxy, oxy-C<sub>2</sub>-C<sub>4</sub>-alkenylene, oxy-C<sub>2</sub>-C<sub>4</sub>-alkenyleneoxy or butadienediyl group, where these bridges for their part may be partially or fully halogenated and/or may carry one to three of the following radicals:

- C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-haloalkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy, C<sub>1</sub>-C<sub>4</sub>-haloalkoxy and C<sub>1</sub>-C<sub>4</sub>-alkylthio;

A is C=O, C=S or SO<sub>2</sub>;

R<sup>1</sup> is C<sub>2</sub>-C<sub>10</sub>-alkyl, C<sub>1</sub>-C<sub>10</sub>-haloalkyl, C<sub>3</sub>-C<sub>10</sub>-alkenyl, C<sub>3</sub>-C<sub>10</sub>-haloalkenyl, C<sub>3</sub>-C<sub>10</sub>-alkynyl or C<sub>3</sub>-C<sub>10</sub>-haloalkynyl, C<sub>3</sub>-C<sub>10</sub>-cycloalkyl, C<sub>3</sub>-C<sub>10</sub>-cycloalkenyl, C<sub>3</sub>-C<sub>10</sub>-cycloalkynyl, or phenyl or naphthyl,

5- or 6-membered heterocyclyl, containing, in addition to carbon ring members, one to three nitrogen atoms and/or one oxygen or sulfur atom or one or two oxygen and/or sulfur atoms or

5-membered hetaryl, containing one to four nitrogen atoms or one to three nitrogen atoms and one sulfur or oxygen atom or

6-membered hetaryl, containing one to four nitrogen atoms;

where the cyclic groups may carry one to four radicals  $R^a$ ;

$R^2$  is hydrogen;

$R^3$  is hydrogen, nitro, cyano,  $N(R')_2$ ,  $C_1$ - $C_4$ -alkyl,  $C_1$ - $C_4$ -haloalkyl,  $C_1$ - $C_4$ -alkoxy,  $C_1$ - $C_4$ -haloalkoxy,  $C_2$ - $C_4$ -alkenyl,  $C_2$ - $C_4$ -haloalkenyl,  $C_2$ - $C_4$ -alkynyl or  $C_2$ - $C_4$ -haloalkynyl, where

$R'$  independently of one another are hydrogen or  $C_1$ - $C_4$ -alkyl;

or  $R^2$  and  $R^3$  together are a group

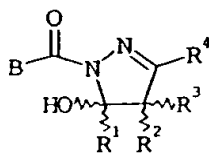
$=O$ ,  $=S$  or  $=N-O-R^5$ , where

$R^5$  is hydrogen,  $C_1$ - $C_4$ -alkyl,  $C_1$ - $C_4$ -haloalkyl,  $C_3$ - $C_6$ -alkenyl,  $C_3$ - $C_6$ -haloalkenyl,  $C_3$ - $C_6$ -alkynyl or  $C_3$ - $C_6$ -haloalkynyl;

$R^4$  is hydrogen, halogen, nitro, cyano,  $N(R')_2$ ,  $C_1$ - $C_4$ -alkyl,  $C_1$ - $C_4$ -haloalkyl,  $COOR'$ , hetaryl or heterocyclyl;

for controlling harmful fungi].

2. A 5-hydroxypyrazoline of the formula IA



IA

in which in case a:

$R^3$  is nitro, cyano,  $N(R')_2$ ,  $C_1$ - $C_4$ -alkyl,  $C_1$ - $C_4$ -haloalkyl,  $C_1$ - $C_4$ -alkoxy,  $C_1$ - $C_4$ -haloalkoxy,  $C_2$ - $C_4$ -alkenyl,  $C_2$ - $C_4$ -haloalkenyl,  $C_2$ - $C_4$ -alkynyl or  $C_2$ - $C_4$ -haloalkynyl;

or  $R^2$  and  $R^3$  together are a group

$=O$ ,  $=S$  or  $=N-O-R^5$ ,

$R^4$  is hydrogen, halogen, nitro, cyano,  $N(R')_2$ ,  $C_1-C_4$ -alkyl,  $C_1-C_4$ -haloalkyl or heterocyclyl;

and B,  $R^1$  and  $R^2$  are each as defined in claim 1, or

in case b:

B is naphthyl, heterocyclyl, hetaryl or substituted phenyl, where the cyclic groups can be substituted by  $R^a$ , and

$R^3$  is hydrogen,

$R^4$  is hydrogen, halogen, nitro, cyano,  $N(R')_2$ ,  $C_1-C_4$ -alkyl,  $C_1-C_4$ -haloalkyl or heterocyclyl;

and  $R^1$  and  $R^2$  are each as defined in claim 1;

where  $R^4$  is not methyl if  $R^1$  is tert-butyl or phenyl and the group B is phenyl which is substituted by 3-bromo, 4-halo, 4-methyl, 4-methoxy, 4-nitro, 4-dimethylamino or 4-fluoro-3-methyl, and

where  $R^4$  is not methyl or  $CF_3$  if  $R^1$  is  $CF_3$ ,  $C_3F_7$ ,  $C_6F_{13}$ ,  $C_8F_{17}$ , or tert-butyl  $R^2$  and  $R^3$  are hydrogen and the group B is phenyl which is substituted by 4-bromo, 4-methyl, 4-methoxy or 4-nitro, and

where  $R^4$  is not thienyl if  $R^1$  is phenyl which is unsubstituted or substituted by 4-chloro, 4-methyl or 4-methoxy,  $R^2$  and  $R^3$  are hydrogen and B is chlorophenyl, and

where  $R^4$  is not ethyl if both the group B and  $R^1$  are 4-fluorophenyl, or

in case c:

B is unsubstituted phenyl,

R<sup>1</sup> is phenyl or naphthyl, heterocyclyl or hetaryl, where the cyclic groups can be substituted by R<sup>a</sup>,

C<sub>3</sub>-C<sub>10</sub>-cycloalkyl, C<sub>3</sub>-C<sub>10</sub>-cycloalkenyl C<sub>3</sub>-C<sub>10</sub>-cycloalkynyl

n-propyl, C<sub>4</sub>-C<sub>10</sub>-alkyl, CHC<sub>12</sub>, CH<sub>2</sub>C<sub>1</sub>, CC<sub>13</sub>, CHF<sub>2</sub>, CF<sub>2</sub>H, CF<sub>2</sub>C<sub>1</sub>, CFC<sub>12</sub>,

C<sub>2</sub>-C<sub>10</sub>-haloalkyl, C<sub>3</sub>-C<sub>10</sub>-alkenyl, C<sub>3</sub>-C<sub>10</sub>-haloalkenyl, C<sub>3</sub>-C<sub>10</sub>-alkynyl or C<sub>3</sub>-C<sub>10</sub>-haloalkynyl;

R<sup>2</sup> is hydrogen;

R<sup>3</sup> is hydrogen, nitro, cyano, amino, methylamino, dimethylamino, C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-haloalkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy, C<sub>1</sub>-C<sub>4</sub>-haloalkoxy, C<sub>2</sub>-C<sub>4</sub>-alkenyl, C<sub>2</sub>-C<sub>4</sub>-haloalkenyl, C<sub>2</sub>-C<sub>4</sub>-alkynyl or C<sub>2</sub>-C<sub>4</sub>-haloalkynyl,

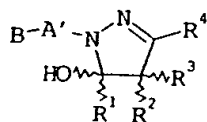
or R<sup>2</sup> and R<sup>3</sup> together are a group

=O, =S or =N-O-R<sup>5</sup>, and

R<sup>4</sup> is hydrogen, halogen, nitro, cyano, N(R')<sub>2</sub>, C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-haloalkyl or heterocyclyl;

where R<sup>1</sup> is not tert-butyl if R<sup>4</sup> is CF<sub>2</sub>H and R<sup>4</sup> is not methyl if R<sup>1</sup> is phenyl.

3. A 5-hydroxypyrazoline of formula IB



IB

in which

A' is C=S or SO<sub>2</sub>

B is unsubstituted phenyl,

R<sup>1</sup> is phenyl or naphthyl, heterocyclyl or hetaryl, where the cyclic groups can be substituted by R<sup>a</sup>,

C<sub>3</sub>-C<sub>10</sub>-cycloalkyl, C<sub>3</sub>-C<sub>10</sub>-cycloalkenyl C<sub>3</sub>-C<sub>10</sub>-cycloalkynyl

n-propyl, C<sub>4</sub>-C<sub>10</sub>-alkyl, CHCl<sub>2</sub>, CH<sub>2</sub>Cl, CC1<sub>3</sub>, CHF<sub>2</sub>, CF<sub>2</sub>H, CF<sub>2</sub>Cl, CFC1<sub>2</sub>,

C<sub>2</sub>-C<sub>10</sub>-haloalkyl, C<sub>3</sub>-C<sub>10</sub>-alkenyl, C<sub>3</sub>-C<sub>10</sub>-haloalkenyl, C<sub>3</sub>-C<sub>10</sub>-alkynyl or C<sub>3</sub>-C<sub>10</sub>-haloalkynyl;

R<sup>2</sup> is hydrogen;

R<sup>3</sup> is hydrogen, nitro, cyano, amino, nethylamino, dimethylamino, C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-haloalkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy, C<sub>1</sub>-C<sub>4</sub>-haloalkoxy, C<sub>2</sub>-C<sub>4</sub>-alkenyl, C<sub>2</sub>-C<sub>4</sub>-haloalkenyl, C<sub>2</sub>-C<sub>4</sub>-alkynyl or C<sub>2</sub>-C<sub>4</sub>-haloalkynyl,

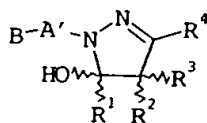
or R<sup>2</sup> and R<sup>3</sup> together are a group

=O, =S or =N-O-R<sup>5</sup>, and

R<sup>4</sup> is hydrogen, halogen, nitro, cyano, N(R')<sub>2</sub>, C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-haloalkyl or heterocyclyl;

where R<sup>1</sup> is not tert-butyl if R<sup>4</sup> is CF<sub>2</sub>H and R<sup>4</sup> is not methyl if R<sup>1</sup> is phenyl.

3. A 5-hydroxypyrazoline of formula IB



IB

in which

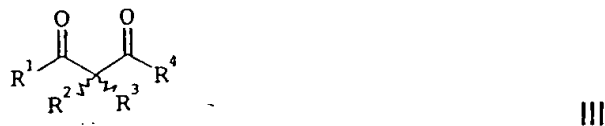
A' is C=S or SO<sub>2</sub>

excluding compounds in which A' is C=S, R<sup>1</sup> is unsubstituted or p-CH<sub>3</sub>-, p-Br- or -p-NO<sub>2</sub>-substituted phenyl, R<sup>4</sup> is methyl, R<sup>2</sup> is hydrogen and R<sup>3</sup> is hydrogen, isopropyl or isobutyl and B is phenyl or 4-methoxyphenyl.

4. A process for preparing compounds of the formula IA as claimed in claim 2, which comprises reacting a hydrazine of formula II,

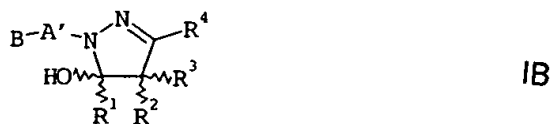


in which B is as defined in claim 2,  
with a diketone of formula III,



in which the substituents are each as defined in claim 2.

5. A process for preparing compounds of formula IB



in which A' is C=S,

where B, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are as defined in claim 1,

excluding compounds in which R<sup>1</sup> is unsubstituted or p-CH<sub>3</sub>-, p-Br- or -p-NO<sub>2</sub>-substituted phenyl, R<sup>4</sup> is methyl, R<sup>2</sup> is hydrogen and R<sup>3</sup> is hydrogen, isopropyl or

isobutyl and B is phenyl or 4-methoxyphenyl,

which comprises reacting compounds of the formula I as set forth in claim 1, in which A is C=O, with Lawesson's reagent.

6. A process for preparing compounds of formula IB



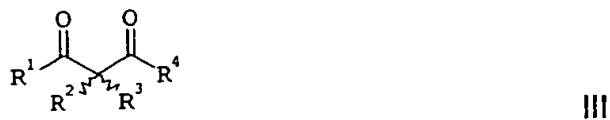
in which A' is SO<sub>2</sub>,

where B, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are as defined in claim 1,

which comprises reacting sulfohydrazines of the formula IV,



in which B is as defined in claim 1 with diketones of the formula III,



in which the substituents are each as defined in claim 1.

8. A composition which is suitable for controlling harmful fungi, comprising a solid or liquid carrier and a compound of the formula I as set forth in claim 1.